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THREE UNPUBLISHED PAPERS ON ORNITHOLOGY.

BY THE LATE EDWARD BLYTH.

[A CRITIC, who has been a diligent student of Blyth's voluminous contributions to zoological literature, has described him as "one of the greatest zoologists who has lived since the time of Cuvier."

Certainly, if we pass over his knowledge of anatomy, which was not profound, it must be admitted that the fund of general knowledge which he possessed on the habits, classification, and geographical distribution of the Vertebrata (chiefly perhaps the Mammalia and Aves) was very remarkable. It appeared all the more so from his wonderfully retentive memory, which enabled him without hesitation, in reply to enquiries, to give valuable information on the subject under discussion either from his own observation, or from what he had read and remembered. Some idea of the extent and variety of the knowledge which he possessed may be formed by perusing the list of his published papers given by Mr. Grote in the excellent memoir which precedes Blyth's posthumous Catalogue of the Mammals and Birds of Burma (1875).

In this list are not to be found the three papers which we have now the pleasure of bringing to the notice of our readers. It is a little curious that they have not already been made public; for they were separately printed in pamphlet form by the author for private distribution, and to elicit friendly criticism and help in the preparation of a general work on the birds of India.

On a printed slip attached to one of these essays, that on the *Certhiidae* or Creepers, we find the author's views thus expressed:—

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"PLAN OF AN INDIAN ORNITHOLOGY: To include descriptions of the species of all India, from the Himalaya southward; also those of Ceylon, Sinde, Assam, and the eastern coast of the Bay of Bengal to the Straits of Malacca; with those inhabiting the islands of the Bay, and the Maldives and Lacadives if practicable."

Then follows, in brackets and italics, the statement:—"Printed for private circulation, and to elicit further information on the groups treated of."

From the printed colophon we learn that these three papers, which treat of the *Certhiidae*, *Capitonidae*, and *Cypselidae* respectively, were printed in Calcutta in 1848, and they would appear to have been written in continuation of a series under the slightly different heading "Drafts for a Fauna Indica," of which the first number on the *Columbidae* was published in the 'Journal of the Asiatic Society of Bengal' in 1845 (vol. xiv., part ii., p. 845), and has been noticed by Mr. Grote in his list of Blyth's papers above referred to. It seems most likely that the series was discontinued when Blyth found that his friend Jerdon was engaged upon just such a work as he himself was contemplating, and he generously communicated to Jerdon much valuable information which subsequently appeared in 'The Birds of India.'

Although the three papers now before us were written so many years ago, it will be no injustice to the author's fame to publish them now. Blyth's views as an ornithologist have generally been found, when impartially tested by his fellow workers, to be so sound, that everything which came from his pen seems worth preserving. We are the more disposed to lay them before our readers since the paper on the *Cypselidae* appears to have escaped the notice of Mr. Selater, who published an excellent monograph of this family of birds in the 'Proceedings of the Zoological Society' for 1865 (p. 593), and in the bibliographical introduction to Messrs. Marshall's 'Monograph of the *Capitonidae*' (1870-71) no mention is made of Blyth's essay on the Barbets now before us. We propose therefore to print these three papers seriatim in successive numbers of "The Zoologist," and will commence with that on the Creepers.]

I. Fam. CERTHIIDÆ.

These are birds which creep upon the bark of trees, or some of them upon rocks, or even rugged ground; having the toes three before and one behind (unlike the Woodpeckers), the outer

toe being connected basally to the middle one as far as the first joint. The bill varies much in shape, according to the mode in which the food is chiefly obtained; but the tongue does not aid in procuring it, being of the common structure, thin, horny, and inextensible; the tip of the upper mandible rarely shows so much as a trace of emargination. They feed both on insects and oleaginous seeds, more or less of one or the other; and the stomach is a tolerably muscular gizzard. All the genera have a well-defined geographical distribution.

The *Certhiidae* may be, first, most conveniently divided into those having a short, even, flexible tail, which is not employed in supporting the body (as the flexible tail of the Wryneck sometimes is); and those having a cuneated tail with stiffened points, as in the Woodpeckers.

A. With short, even, unpointed tails.

Subfam. SITTINÆ (Nuthatches).

A group of small birds, from the size of a Lark downward to that of a Wren; with wings reaching nearly or quite to the end of the short tail; a moderately long, awl-shaped beak of considerable strength; and strong feet, having the hind toe especially much elongated, and the claws of all the toes stout, compressed, and equally curved. They traverse the bark of trees in every direction, up or down a perpendicular bole, or on the lower surface of a horizontal bough; and the bill is either straight or inclines to be a little recurved, being adapted either for striking with much force, or for raising and detaching scales of bark to get at the insects which lurk beneath.

Two genera are recognised—*Sitta*, with stout subcylindrical bill, straight or with but a very slight tendency to recurve, and wings not reaching to the end of the tail, which is peculiar to the temperate regions of the northern hemisphere, being in India confined to the hills,—and *Sittella*, with weaker and much compressed bill, distinctly recurved, and having an emarginated tip to the upper mandible, and the wings reaching quite to the end of the tail, which is peculiar to Australia:* the former, however, comprises *Dendrophila*, a subgenus of more tropical abode,

* With the *Acanthisitta* of New Zealand I am unacquainted; but *Sylvia citrina* and *S. longipes*, Lath., are here placed, which are not described to have stiffened tails, and the name would seem therefore to refer to the form of the beak.

inhabiting the hill regions of India, Burmah, and the Malay countries, which has merely a smaller and less compressed bill than the true *Sitta*.*

Genus *SITTA*, Linn.

Bill subcylindrical, a little compressed and at base depressed, more or less stout and elongated, generally about the length of the head, straight, pointed, with the lower mandible sometimes tending a little upward towards its extremity; nareal orifices roundish, pierced in the base of the nasal membrane. Wings capable of steady and sustained flight (not unlike that of the *Sturnidæ*), having the first quill short, the third, fourth, fifth, and sometimes sixth, longest and subequal, and the second about equalling the seventh. Feet having the middle and hind toes of equal length, and the inner shorter than the outer; the tarse not equalling in length the hind toe with its claw. Plumage dense and of rather open texture in most species, the plumelets of the feathers unadhering; and the colours are generally grey above, with a black cap or only sincipital streak, and more or less rufous below, with white spots on the tail and its under-coverts.

These are robust little birds, endowed with much energy. The British species commonly alights high upon the bole of a tree, not unfrequently uttering a loud, piercing, and several times repeated chirp. It is seen chiefly in pairs, whereas the *Dendrophila* are commonly observed in small parties, and the *Sittella* sometimes in more numerous assemblages. Yet I have observed it to be rather social than otherwise, at least during the winter, at which season I have remarked one calling for more than an hour to its companion that had been shot; but in the pairing season they become pugnacious, and I have then seen them fight desperately on the wing. Among the remarkable habits of this bird is that of firmly fixing a nut or beech-mast in some convenient crevice, and then, holding on with its strong feet and swinging its body as upon a pivot, it will pierce the envelope with sharply repeated blows of its bill; and as the common English Thrush (*T. musicus*) is observed to return often to the same pebble in a garden walk, against which to break its snails, whose

* There are some S. American birds which nearly approximate the *Sittina*, even in colour; but these have lengthened tarsi, a short hind toe, graduated tail, and a curved tip to the upper mandible, seeming altogether to indicate different (and it would appear Myiotherine) affinities.

shells soon accumulate around, so the Nuthatch has been observed to resort habitually to the same suitable crevice in a tree.* It has also the hoarding instinct, like the *Paridæ*, *Corvidæ*, &c., as has been observed of it both wild and in captivity; and for a nesting-place it selects a hole in a tree, the entrance of which, if too large, it contracts with mason-work of clay. Eggs six or seven, white, rufous-speckled; and the bird, when disturbed sitting, makes a formidable sounding hissing noise at the intruder.† Such are no doubt the habits of most of the other species; but *S. syriaca* is remarkable for frequenting rocks only, and never trees.‡ In climbing, these birds make much use of the real *heel* as a support. They roost with the head downward. Four species have been discovered in N. America, and three in Europe, all different from those of India.

S. FORMOSA, Blyth, J. A. S. xii. 938, 1007.—This species is unique among the Nuthatches for its size and beauty. Colour black above, spotted with ultramarine on the crown and back; the wing-coverts and tertiaries broadly tipped and margined partially with white; fore part of the wing, scapularies, rump, and upper tail-coverts bright lavender-blue; rectrices, great alars and their coverts margined with the same, extending nearly over the middle pair of rectrices; outermost pair of rectrices broadly,

* In confinement, according to Bechstein, turned loose in a room, its manner of breaking the husks of the hemp-seed and oats which are given it for food is curious and remarkable. Taking as many as it can in the beak, and ranging them in order along the cracks in the floor, so disposing them that they may be broken with facility, it then proceeds to despatch them one after another with the greatest ease and agility. The common British Nuthatch is a remarkably bold and active bird, in the wild state more fearless than familiar, and even if shot at and missed appears in general not in the least disconcerted, or perhaps merely flies chirruping to the next tree, and resumes its occupation as before. It displays the same fearlessness when captured and placed in a cage, losing no time in fruitless and sullen vexation, but—regardless of being looked at—eats voraciously of whatever food is supplied, and then proceeds deliberately to destroy its prison, piercing the woodwork, and effecting its deliverance from a stout cage of the ordinary make in a wonderfully short space of time. One caught in a common brick trap, such as boys set in England, was found to have fairly ground its bill to about two-thirds of the proper length in its persevering efforts to escape.

† The *Sittellæ*, it is remarkable, nidificate in the fork of a tree.

‡ *Sitta syriaca* (or a species allied in habit) is common in Afghanistan, and thence would extend westward to the S.E. of Europe. Vide J. A. S. xvi. 782.

and the rest narrowly, tipped with white on their inner web; under parts bright ferruginous, paler on the throat and also forehead, whence passing backward as a supercilium. Wing 4 in., bill to gape 1 in. Inhabits Sikim.

S. CINNAMOVENTRIS,* Blyth, J. A. S. xi. 459.—Resembles *S. cæsia*, Michahelles (*i. e.*, the British Nuthatch†), only that the under parts of the male, except the white chin and sides of the throat, are of the same deep maronne colour as are the flanks only of *S. cæsia*, the lower tail-coverts being similarly mottled with white. In the female the under parts are of a much weaker and more dingy maronne. Wing $2\frac{1}{4}$ in.; bill to gape 1 in. Hab. S. E. Himalaya.

S. CASTANEOVENTRIS, Franklin, P. Z. S., 1831, p. 121; J. & S., Ill. Orn., 1st series, pl. 165.—Similar to the last but smaller, the bill much narrower and more slender, and the general colouring more vivid. Wing $2\frac{7}{8}$ in.; bill to gape $\frac{7}{8}$ in. Hab. Himalaya, and hilly regions of India generally. Mr. Jerdon has shot it at Goomsoor, in high forest jungle, and has seen specimens shot at the top of the Gazalhatti Pass, in Mysore. Capt. Tickell obtained it at Chyebassa, and I have seen it in collections from Rajmahl in Bengal, and from Darjeeling.

S. HIMALAYANA, Jardine and Selby, Ill. Orn., 1st series, pl. 164; *S. nipalensis*, Hodgson, J. A. S. v. 779.—A small species, with remarkably short bill, tapering evenly from the base as viewed from above. Colour nearly as in *S. cæsia*, but the vent and under tail-coverts of the same unspotted rufous as the flanks, which are paler than in *S. cæsia*, and the middle pair of rectrices are white at base, except along the exterior border. Wing $2\frac{7}{8}$ in.; bill to gape 11-16th in. Hab. S. E. Himalaya.

S. ———? Size about that of *S. cæsia*, with long and slender bill, a black cap, white throat and breast, and dark chestnut belly. Hab. Interior of N.W. Himalaya.

Subgenus DENDROPHILA, Swainson.

Merely differs in having a shorter and more feeble bill than in

* Contracted from *cinnamomeoventris*.

† The Scandinavian *S. europæa*, L., is the species termed *asiatica* by Temminck, and *uralensis* by Lichtenstein. It differs only from *S. cæsia* in having the throat, breast, and abdomen pure white. Some zoologists would, however, consider *S. europæa*, *S. cæsia*, and *S. cinnamomeoventris* as but local varieties of a single species.

the true *Sittæ*, and delicate silky plumage. It is barely separable. The Indian species is, however, more social in its habits than the typical Nuthatches, frequenting the under surface of boughs in small parties, and raising scales of bark in the same manner as its congeners, to get at the insects beneath, but never (so far as has been observed) striking or tapping with the bill. The more tropical habitat is also worthy of notice, though confined to the hill forests; and the Indian species extending its range to those of the Himalaya.

D. FRONTALIS; *Sitta frontalis*, Horsfield, Linn. Tr. xiii. 162; figured in Swainson's Zool. Ill., 1st series, pl. 2; *S. velata*, Temminck; *S. corallina*, Hodgson, J. A. S. v. 779. Fine blue above, with a broad velvety-black forehead; lower parts delicate lilac-brown, passing to white on the throat; bill coral-orange. Wing $2\frac{3}{4}$ in.; bill to gape $\frac{5}{8}$ in. Inhabits the hilly regions of India generally, Burmah, and the Malay countries. According to Capt. Tickell, "it flies and climbs upon the underwood with great rapidity, and is found in the thickest parts of sâl jungle." Mr. Hodgson describes it from the central and northern regions of Nepal; and Mr. Jerdon informs us that "it is found in great abundance in the dense woods of the Nilgiris. I have seen it, though rarely," he adds, "below the ghâts, also in thick forest jungle. It hunts, in general, in small parties of five or six; is very active and restless, creeping round the horizontal branches chiefly, and seeming to prefer the under surface of the boughs, and also running downwards. It feeds on various small insects, which it picks off the bark, but does not tap like the common Nuthatch." Mr. Swainson figures it from Ceylon, where also it is common. It likewise abounds in Assam, Sylhet, Arracan, the Tenasserim provinces, and Malayan Peninsula. Sir St. Raffles observed it in Sumatra; and Dr. Horsfield in Java.

A second species is mentioned by Mr. Swainson by the name *D. flavipes*, probably from the Malayan Archipelago.

Subfam. ———?

A mere group of convenience, provisionally adopted until the affinities of the genera have been more critically determined. It consists of species which combine the feebler frame, and bill and feet of the Tree-creepers with the soft tail of the Nuthatches. Such is the Australian genus *Climacteris*, the habits of which are quite those of the northern Tree-creepers, except that they come

much upon the ground among fallen leaves, and upon prostrate trunks; but in climbing they can only *ascend* like the Tree-creepers, except sometimes by a few hops backward and obliquely downward, as is also the case with the *Certhiæ*. The two following genera may be included :—

Genus TICHODROMA, Illiger (Rock-creeper).

Bill longer than the head, slender, nearly straight, but incurved a little at the acute tips; the terminal half compressed, and the basal gradually widening to the gape; culmen distinct throughout. Nareal orifices sublinear, pierced in the fore part of the nasal membrane. Wings long and large, reaching nearly to the tip of the short tail; the first primary half the length of the second, which equals the ninth; and the fourth, fifth, and sixth being subequal and longest. Outer tail-feathers a little shorter than the rest. Tarsi slender, about the length of the middle toe with its claw; the toes also slender and rather long, with compressed tapering claws but slightly curved, that of the hind toe as long as the digit. Plumage dense and puffy; the great alars remarkably broad, whence its mode of flight as below noted.

But one species is known, which has much the aspect of a feeble Nuthatch, with long and slender bill and large wings. It inhabits mountain precipices, creeping about upon rocks and old buildings, in the crevices of which it breeds. Mr. Vigne remarks it to "display the delicate scarlet patch upon its wings, as it flits over the perpendicular rocks, with the movements of a butterfly rather than of a bird." These rock-frequenting habits are no disproof of its affinity for the forest Creepers, since the *Sitta syriaca* (a typically formed Nuthatch) frequents the same haunts, unlike the rest of its genus.

T. MURARIA; *Certhia muraria*, L.; *T. phænicoptera*, Tem.; *T. europæa*, Stephens.—Delicate pale ash-grey above, the crown often brownish; throat and breast white, or whitish; abdomen dark fuliginous-ashy; anterior two-thirds of the wings crimson, as are also the axillaries; rest of the wing and tail black, the great alars and middle rectrices tipped with ashy; the outermost rectrices broadly tipped with white, successively decreasing on the others; and the outer primaries marked on their inner webs with two white bars, the basal continued over a greater number of feathers in the female, in which these additional spots are

ferruginous; lower tail-coverts white-tipped. Wing 4 in. or less; bill to gape $1\frac{1}{4}$ in. Inhabits the Himalayan rocks, and those of W. Asia and S. Europe, especially in Sardinia and Spain. It is common in Afghanistan.

Genus SALPORNIS, G. R. Gray.*

Bill long, curved throughout its length, broad and sub-depressed at base, and much compressed beyond the nostrils; nareal orifices broad, pierced in the fore part of the nasal membrane. Wings reaching to the end of the short tail, pointed, having the first primary very short, and the second nearly as long as the third and fourth, which are equal and longest. Tarsi shorter than the middle toe; the toes long, especially the hinder, and the claws are moderately curved and tapering, that of the hind toe being elongated. The foot is described to resemble that of *Rimator*.

S. SPILONOTUS; *Certhia spilonota*, Franklin, P. Z. S., 1831, p. 121.—“Above fuscous-grey, white-spotted, with narrow white streaks on the head; throat and abdomen whitish, the latter barred with dusky; tail banded white and fuscous. Length $5\frac{3}{4}$ in.” Inhabits Behar, and probably the hill regions of Central India generally. (*Non vidi*).

B. With cuneated tails, having stiffened points (as in the Woodpeckers).

The *Certhiidae* of this division are numerous in the forests of S. America, where they vary greatly in size and in form of bill, but have generally a short hind toe, and strong curved claws of about equal size on all the toes. The bill is sometimes very strong and recurved, as particularly in *Xenops*,—Nuthatch-like in *Dendrodromus*, Gould,—very long, stout, compressed, and more or less incurved, in forms of *Dendrocolaptes*; and in others again short and resembling that of *Synallaxis*, which genus and its modifications constitute an allied subfamily, near which would appear to range the true *Certhiæ*. Not any of these birds are known to descend a perpendicular surface, in the manner of the Nuthatches. The last three subgroups indicated should perhaps form the

Subfam. CERTHINÆ.

Of feeble structure; the tail cuneated, with pointed feathers,

* Ann. Mag. N. H. 1847. p. 352.

but weakly if at all spinous at tip; claws but moderately curved, that of the hind toe more or less elongated.

Genus *CERTHIA*, L. (Tree-creeper).

Size small; bill about the length of the head, slender, compressed, moderately incurved, the tip of the upper mandible unemarginated. Toes and claws long; the latter extremely compressed and tapering, that of the hind toe especially elongated. Tail cuneated, not very stiff, with protruding but scarcely spinous tips, and in certain species rather long; wings of mean length, feeble, with the third, fourth, fifth, and sixth primaries subequal, and the first nearly half the length of the second. Plumage of open texture, and speckled brown above, more or less deeply tinged with rufous on the rump, and plain (or at least streakless) below. Sexes alike.

This genus inhabits the temperate and even moderately cold regions of the northern hemisphere, but has nowhere been observed so numerous in species as in the Himalaya, where at least three species occur, though in separate regions. The only others known are *C. familiaris* of Europe and N. Asia, and *C. americana* and *C. albifrons* of N. America—the former of these hardly differing from *C. familiaris*. The bill of these little birds is compressed and sickle-shaped, adapted for insertion into chinks and crevices; and their wings are suited only for short flights from one forest tree to another—the bird commonly alighting on the trunk near the ground, and then spirally ascending, or generally keeping to the opposite side of the bole to that at which a spectator may be placed. Not unfrequently it will flutter down to re-alight upon and again ascend the same tree; but if attempting to descend otherwise than by flight, it never does so in the manner of the Nuthatches, head foremost, but by a few hops obliquely backward (as before stated of the Australian genus *Climacteris*). The British species builds a warm feather-lined nest in some convenient niche outside the trunk or large branch of a tree, or against an old mossy paling; laying numerous translucent white eggs with rufous specks; and it often repeats a faint chirp, like that of a *Regulus*, and in spring utters a short weak song. Its retiring habits, however, cause it to be much less observed than from its commonness would otherwise be the case.

C. HIMALAYANA, Vigors, P. Z. S., 1831, p. 174; *C. asiatica*,

Swainson, 2½ Cent. B.—Size of the European *C. familiaris*, with the bill rather longer. Upper parts less rufescent, and more tinged with dusky on the crown and back than in that species; the rump less tinged with ferruginous; and the tail throughout strongly and conspicuously barred with numerous dusky cross lines. Under parts subdued white, purer on the throat. Wing 1½ in.; bill to gape ¾ in. Common in the Deyra Doon.

C. NIPALENSIS, Hodgson, MS.; *C. himalayana* apud nos, J. A. S. xiv. 581; *C. spilonota*, &c., of Gray's Catalogue of Mr. Hodgson's specimens presented to the British Museum.—Larger than *C. familiaris*, with a much longer tail; the upper parts more rufescent, having the colours also more defined; lower back, rump, and upper tail-coverts deep reddish ferruginous; tail not banded; under parts white, a little tinged with ferruginous; the flanks and lower tail-coverts ferruginous, less deep than that of the rump. Wing 2¾ in., tail 3½, bill to gape ¾ in. Common in Nepal.

C. DISCOLOR, Blyth, J. A. S. xiv. 580.—Nearly allied to *C. nipalensis*, but the entire under parts dingy brown, paler on the abdomen; and no ferruginous on the flanks, but only on the lower tail-coverts; rump and upper tail-coverts ferruginous, but this colour does not pass on the back as in *C. nipalensis*. Both have sometimes a strongly rufescent tinge on the tail. Admeasurements the same. Common in Sikim.

THE BIRDS OF PEMBROKESHIRE.*

BY THE REV. MURRAY A. MATHEW, M.A., F.L.S.

PEMBROKESHIRE, with its extended littoral and its numerous bays and tidal inlets, all facing the W. and S.W., would appear to offer an attractive resting-place to the crowds of migrating birds which, at the autumn and spring migrations, must be passing its coasts. In this respect its situation is very similar to that of Devonshire and Cornwall—two counties which are singularly rich in their lists of rare birds, especially North American species. And, no doubt, careful observation would detect equally rare stragglers on these coasts. Ever since the commencement of the present century the Devon and Cornish shores have been

* A paper read at a meeting of the Pembrokeshire Naturalists' Field Club, 13th March, 1884.

closely watched. Col. Montagu, at Kingsbridge; Mr. Gatcombe, at Plymouth; Mr. E. H. Rodd, at Penzance, and other ornithologists, might be named who have recorded every rare bird which has been obtained in their respective counties. Pembrokeshire, probably, has not possessed such devoted students of bird-life; and its towns may also have been without a resident bird-stuffer to whom any singular bird might be brought for preservation. It must be said that these local bird-stuffers' shops are very useful in helping towards a knowledge of the birds which occur in a district. Where they do not exist many a scarce bird is obtained and thrown away, and no record of it is kept.

The scanty list of Pembrokeshire birds must be attributed to the absence of observers at the favourable situations, and of bird-stuffers' shops in the county towns. My own observations have been entirely confined to the northern portions of the county, and, compared with other parts of the United Kingdom, the Pembrokeshire avifauna appears to me to be deficient in several resident and many migrating species. The bare and bleak character of that part of the district which stretches for miles to the W. and S. of St. David's, and the absence of trees, may account for many birds being missing from the list of residents; and its being out of the track of migration may be the cause why so many of the summer migrants fail to reach us. The Nuthatch, and the Greater and Lesser-spotted Woodpeckers, may naturally be absentees from a sparsely-timbered country, and to the same cause may perhaps be assigned the non-appearance of the Wryneck, the Long-eared Owl, and the Stock Dove.

Of the smaller summer visitants there are many for which I have searched in vain, which might have been well expected here. I may instance the Wood Wren, so common in the summer in the woodland districts which skirt the Forest of Exmoor in Somersetshire; and the Black Redstart, a regular autumnal visitant to the seaboard of Devon and Cornwall.

The British Association for the Advancement of Science, at its meeting at York in 1881, appointed a committee of ornithologists of repute to obtain from the keepers of the various light-houses and light-ships around the coast some record of the migrations of birds as observed by them. Lists were accordingly issued to all the stations, and particular attention was requested to the state of the weather and to the direction of the flight of the

passing birds. Many lists have, in consequence, been received each season since then from the east and west coasts of England and Scotland, and from the coasts of Wales and Ireland, and these, although not so numerous or so perfect as they might be made, have afforded very interesting details respecting the wonderful passage of migratory birds across this kingdom. It is easy to understand the difficulties there must be in the way of rendering these valuable sources of observation yield their full amount of information. One of them has been referred to by the keeper of the lighthouse at Milford, who states that he cannot put down all the birds he sees through ignorance of their names, and suggests that pictures of the birds should be supplied. Some of the lighthouses are rarely visited by birds, being apparently out of the path of passing migrants, or else situated at some little distance from the coast. The phenomenon of migration is witnessed to the fullest extent along the eastern shores of England and Scotland, against which the great wave of migratory birds is chiefly launched when the migratory impulse at the end of summer and beginning of autumn affects the millions of birds which have nested in the north of Europe, and impels them to make their great annual movement towards their winter abodes. Their course then is from E. to W., or from S.E. to N.W., and the second week of October is the period when the greatest multitudes are passing over. The extraordinary concourse of birds which on dark and foggy nights at that season in the autumn besets the lighthouses on the E. coast cannot fail to arrest the wonder of the least observant, and for this reason the lists from the E. coast are fuller and are sent in from more stations than on the W. coast. The great migratory flocks expend themselves to a large extent in the woods and fields of the English counties, and those which still continue their flight on their way to their quarters in Ireland or Brittany, or still further south, are only portions of the great army which invaded our eastern shores. The lesser numbers rob from the phenomenon something of its wonder, and thus many of the keepers of lighthouses on the W. coasts do not think it worth their while to report the comparatively few birds which throng their lanterns, while some declare (which is, no doubt, the fact) that their lights are altogether unvisited, being out of the course of the birds. But this last cannot be the reason for the absence of reports

from such stations as the South Bishop, the Smalls, and Caldy—lists from which would be of deep interest in ascertaining the distribution of migratory birds in this county. The Tuskar rock, on the coast of Wexford, seven miles from the shore, is the nearest point on the Irish coast to Pembrokeshire from which there are any returns, and the birds there observed must, we presume, have made their flight either directly over this county or along its coasts. Numbers of birds are reported as striking against the lantern at the Tuskar, and eighteen species are named. It would seem that there is hardly a bird that can be mentioned which does not migrate. The smallest and the feeblest, such as Goldcrests, Wrens, and Chiffchaffs, are those which trust themselves to the dangers of a passage across the stormy seas in the greatest numbers. The passage of birds over great distances of water is supposed to indicate a period of time when the seas which they now cross over did not exist. A very slight elevation of the surface of the ground would cause the shallow German Ocean and the English Channel to disappear, and the British Isles would again be what they were once—the western edge of the continent of Europe. It is well known that birds inhabiting islands surrounded by very deep water do not leave them, although the mainland may be comparatively near. The present migrations of birds to and across this country date from a time when, in search of a warmer temperature, they made their flight entirely over land. The tiny gold-crest leaves the fir-woods of the North of Europe in the autumn in millions, and about the same time as the Short-eared Owl and the Woodcock, its invariable and strange *compagnons de voyage*, is found arriving on our eastern coast. The unparalleled numbers which came to this country in the autumn of 1882 was the most noticeable feature in the migrations of birds during that year. On a fine and clear night the flocks of birds keep wide of the lighthouses, but if it is rough and foggy they dash themselves against the light, and their dead bodies are to be gathered next morning in the lantern gallery or on the ground at the base of the lighthouse. Thus we read of small birds being picked up at one lighthouse in wheelbarrows, and being distributed over the land as manure; of 200 Chiffchaffs, one of the very smallest of our summer birds, striking against the lantern at another place, and of 196 being picked up dead; of over 1000 birds of various kinds being found dead

after a single night at another place; of Blackbirds, Thrushes, and Larks striking all night against the Tuskar, "many of each killed;" on another night of "Starlings and Larks striking for one hour, fifteen Larks and twelve Starlings killed;" on another night forty Starlings were killed; and there are many such entries. The birds pass over all day and all night. Some species prefer to make their journeys by night, others only by day. The Swallow chooses the daytime. One warm and genial morning in mid April I was standing on my vicarage lawn in Somersetshire, when a little flock of Swallows suddenly appeared overhead. They descended with joyful twitterings, and, after swooping round me as if to give me a greeting, they settled on the housetop, and at once commenced in an eager bustling way to inspect the familiar chimneys. I have no doubt that I then witnessed the arrival of the contingent which belonged to my own premises.

The destruction of birds at the migration time must be very great. Besides those which beat themselves to death against the lanterns of the lighthouses—treacherous decoys in the darkness of stormy nights—thousands must often drop into the sea and perish when they become exhausted through meeting with adverse winds and rough weather at the period of their passage. Captains of ships have reported the sea as covered for miles with their bodies; and I have myself frequently seen thousands of dead Guillemots, Razorbills, and Kittiwakes strewing the shore of the Devonshire coast after a severe autumnal gale. The migratory impulse thus lures myriads of birds to their destruction; and it is a curious fact that the largest and earliest flocks consist entirely of young birds. They have never before made the perilous journey; they know nothing of the country to which their instinct urges them to fly; and yet they are constrained to make the rash venture by an inward overpowering feeling called by naturalists "the hereditary instinct," and without guidance or direction, save that of the Divine Providence without whose ordering a single Sparrow does not strike the ground, they embark and trust themselves to the darkness of the night and the wild October skies. In the report from the E. coast of England for 1881 it is stated that "snow-buntings have been considerably in excess of anything known for many years, the proportion of old birds not more than one in a hundred."

The recently formed Ornithologists Union in America has

taken up the migrations of birds on the American Continent as its first study, has mapped out its vast territories into districts, has invited observations from everyone interested in natural history, and is prepared to most carefully tabulate and compare all results which may be thus obtained.

It may be said that the students of bird-life of the present day are fully awake both to the interest of these vast seasonal bird shiftings and to the unsolved problems which as yet lie behind them. If on a map of the globe lines could be drawn accurately setting down the forward and backward movements of birds, we should not only be astonished at the greatness of the phenomenon, but we should be possessed of clues which might disclose to us important secrets concerned with the physical geography of the earth in past ages.

There can be little doubt that the primary cause of bird migrations is temperature. We well know that the isothermal lines have been over and again deflected; and it is at present a problem whether the movements of birds indicate the lines of ancient temperatures, or have been changed in direction as the temperatures of the countries frequented by them have been modified.

On their return journey in the spring many birds appear to take a different route to the one they had observed in the autumn. The Knot and the Bar-tailed Godwit, which in the autumn may be found in large numbers upon the ooze and sandflats along the coast, are rarely seen on their passage back in the spring; whereas the Whimbrel, so common along the shore in April and May on its way back to the north, is equally rare in the autumn—proving that these birds have one route for their spring migration and another for their autumnal journey. But the avifauna of a district becomes varied through other causes than migration. Pembrokeshire used to be in a special degree the winter abode of the Snipe, the Woodcock, and the Wild Duck. Drainage and improved cultivation; the wanton destruction of the birds at their northern breeding-stations; the efficiency of modern sporting guns and ammunition, with the increased numbers of sportsmen, have all conspired to reduce these birds to a tithe of their former numbers; but while these have decreased, many other species have found the county yearly becoming more adapted to their requirements, and have proportionately multiplied. Of

these I may instance the Partridge, the Pheasant, and the Starling. This last bird now visits us in the autumn in numbers which would be portentous were it in any sense a mischievous species. On the contrary, the benefit it confers upon the pastures must be immense in its destruction of millions of grubs preying upon the roots of the grass. Half a century ago the Starling was almost unknown in the West of England. A few small flocks were occasionally noticed in the autumn, and were looked upon as the precursors of a severe winter; but it was so rare a bird that even Col. Montagu had never seen a young one in its nestling plumage, and actually described the first which was sent to him as an unknown Thrush, calling it "the Solitary Thrush" (*Turdus solitarius*). Since that time the Starling has regularly established itself in Devonshire and Cornwall, and will, no doubt, before long add itself to the birds which are to be found all through the year in this county. Indeed, Mr. Propert informs me that a few nests have already been met with at St. David's.

Besides the regular seasonal migrations of birds, small local shiftings are continually occurring, due to the changes of weather. Snipe-shooters are familiar with the advice given by old sportsmen to go after the birds whenever there is a change in the direction of the wind. For many years in succession I used to wander with my gun over Dartmoor Forest. One day perhaps I would walk for hours without obtaining a shot; while on the next, going over precisely the same beat, the birds would be so numerous that my supply of cartridges would be soon exhausted, the change being due to some sudden alteration in the weather. A severe and continued frost sends numbers of birds to seek for food on the sea-shore. A heavy fall of snow comes upon our feathered friends as a great calamity, and the small birds which feed upon seeds and grain are then in a sorry plight. One severe winter which I spent upon Lundy Island was made memorable by the immense flocks of Sky Larks which arrived there during the snow. All through the day they kept coming over from the mainland in countless hosts, and soon were so thickly dispersed everywhere upon the ground that it was impossible to fire at a Snipe or a Woodcock without killing or wounding some of these unfortunates. In such weather Sky Larks will also collect in gardens to feed upon anything green they may discover, and it is curious then to watch them. Six or eight may be seen at work

upon a single plant, and whatever it may be—winter kale, savoy, broccoli, or what not—in a very short space nothing will be left but the mere skeletons and ribs of the leaves, all the soft green flesh having been entirely eaten off by the starving little marauders.

If on the mainland the avifauna of this county, in comparison with some others, may be somewhat scanty, the difference is more than compensated by the interesting species frequenting the islands studding its coasts. On these the Buzzard, the Peregrine Falcon, the Raven, and the Chough are to be found nesting; and in the summer time countless hosts of sea-fowl, including the Guillemot, Razorbill, Puffin, Kittiwake, Herring, and Lesser Black-backed Gulls, Gannet, and the Green and Common Cormorants. Skomer possesses the distinction of being, perhaps, the island all round the British coasts most frequented by the Manx Shearwater. It also affords a home to the Common Tern and Stormy Petrel. Grasholme alone is occupied by the Gannets. All the islands are tenanted by the Chough, which, together with the Common Buzzard, has also several nesting-stations on the cliffs of the mainland. Such birds as the Chough, Raven, Gannet, and Manx Shearwater are sufficient to give an individuality to the bird records of the county, and to make it as interesting to the naturalist as any other in Great Britain.

I have prepared lists of birds which as yet I have been unable to detect in the northern portion of the county. (1) Among residents I find there are absent: Long-eared Owl, Tree Sparrow, Hawfinch, Cirl Bunting, Dartford Warbler (this species surely ought to be met with in a county so abounding in furze, and so similar in many respects to Cornwall, where, in the neighbourhood of Truro, it is not uncommon), Wood Lark,* Nuthatch, Greater Spotted Woodpecker, Lesser Spotted Woodpecker, and Stock Dove. (2) Among spring migrants I have not yet seen the Ring Ouzel, Pied Flycatcher, Nightingale, Wood Wren, Garden Warbler, Reed Warbler, Redstart, Ray's Wagtail, White Wagtail, Wryneck, and Turtle Dove. The Blackcap is very rare. Of the small soft-billed birds the Chiffchaff is by far the most

* I may observe that the first autumn I was at Stone Hall (1880) Wood Larks were common there, and that I have never seen any since; I thus conclude that these were only birds on passage, and that this district is out of their usual line.

numerous species, being in the proportion of at least twenty to one to the Willow Warbler. And (3) among the autumn migrants I have been unable to detect the Siskin, Brambling, Twite, Black Redstart, Fire-crest, Royston Crow, Solitary Snipe, Norfolk Plover, and Green Sandpiper. It is to be noticed that each of these three lists is somewhat a lengthy one. I have no doubt that several of the birds I have here set down as absent from the northern division of the county have been observed as regularly occurring in the southern division, which is of a softer character, and better wooded than our northern "mountain" country. At the beginning of February last Mr. W. Summers, of Heathfield, sent me a Goosander which he had shot upon one of the ponds there. This was shortly after one of the severe gales which were so frequent this last winter, and stress of weather had evidently driven it so far inland. It was a female, and, in spite of being greatly infested by a large parasite, was in good condition.

Since the foregoing remarks were written, the Editor of the *Zoologist* has directed my attention to "A list of birds observed in Pembrokeshire," by Mr. Thomas Dix, printed in 'The Zoologist' for 1866, which I had overlooked. On turning to it I find that he paid but a short visit to the S.E. corner of the county not far from Carmarthen, and his list does not include many species (84). Some of his observations are borne out by my own experience, but he has made one or two mistakes. He was able to include some species which are not found in this mountainous region, such as Wood Wren, Wood Lark, and Wryneck—I am rather doubtful about the last. He states that the Garden Warbler is about as numerous as the Blackcap. I think he is in error here. I have never been able to detect the Garden Warbler in the extreme West of England. I never saw it in Devon or Cornwall, and it was extremely rare even in the neighbourhood of Taunton. In a list of the birds in the Tenby Museum, said to have been obtained in the county, this Warbler is mentioned, but on going to look for it, I could not discover it in the collection, and the bird the Curator pointed out to me as the Garden Warbler was undoubtedly a young Willow Wren! Mr. Dix is wrong in stating that the Black Grouse occurs in Pembrokeshire. It certainly does not, and I have never seen any part of the county which looked as if Black Game might occur there. Mr. Dix's words, however, are, "I

have not seen this bird, but I am told that a few are to be found near Fishguard." Mr. Dix admits (*tom. cit.* p. 140) that his observations were confined to a rather limited district, and that many other species, particularly among sea birds, might be added to his list.

ON THE EXISTENCE OF TWO SPECIES OF AQUATIC FROGS IN NORTH GERMANY.

By G. A. BOULENGER.

A SPECIES so widely distributed as *Rana esculenta* has naturally given rise to the establishment of many so-called distinct "races" or "species," but they have been founded on vague and trivial characters, such as size, colour, roughness of the skin, &c. Of late years the great variability of this species has caused all these so-called forms to be thrown together, with the exception of the oriental *Rana marmorata*, Hallow., which is regarded by Camerano, Lataste, and myself as a distinctly recognizable form, whether termed "species," "subspecies," or "variety." Quite recently Camerano, in a valuable paper on the variations of *R. esculenta* in the Mediterranean district,* has shown that distinct forms or varieties, restricted to certain countries, may be grouped under two principal headings:—(1), those distinguished by a much developed inner metatarsal tubercle; (2), those with a very feeble inner metatarsal tubercle. The first group includes three varieties: (1), *viridis*, Rösel, the typical form figured by Rösel, generally distributed in Central and Northern Europe, and found also in Italy; (2), *lessoneæ*, Cam., of Italy; (3), *cachinnans*, Pall., of E. Europe and the borders of the Black Sea. The second group comprises two varieties: (1), *bedriagæ*, Cam., from Damascus; (2), *latastii*, Cam., of N.E. Africa and Portugal. I need not enter now into the discussion of these races, as I reserve the subject for a future communication. I will only add that, simultaneously with Camerano, I drew attention† to the variation of that same character of the metatarsal tubercle, remarking that it corresponds pretty nearly with the habitat; but the material then at hand did not permit me to insist upon that subject. My attention has been drawn to

* Comptes Rendus de l'Assoc. Franc. x. (Congrès d'Alger.), p.680.

† Cat. Batr. Ecaud. Brit. Mus., pp. 9, 38.

the forms of North Germany by recent remarks of Pflüger.* He observes that two distinct varieties occur near Berlin, the typical form, and a larger one which he designates as the "Seefrosch," from its inhabiting the lake-like expansions of the River Spree. A fisherman named Noack, who for years has been supplying physiological institutes with these large frogs, considers the two as distinct species, because he can unmistakably distinguish them at first glance, and because they breed at different times of the year. The "Seefrosch" is an earlier breeder, having finished breeding at the end of May, at which time the other kind commences. Pflüger, who has obtained the larger frog from Noack, regards them as distinct races, but does not give any definite distinctive characters. Having myself applied this spring to Noack, I have received from him 126 specimens, which at first sight I separated into two distinguishable forms. On closer examination I find that they are really distinct, and that the new kind belongs to Group 2 of Camerano, whereas the typical form of Rösel has a strong metatarsal tubercle. I find, moreover, other characters, which require careful working out; for the present I will restrict myself to a comparative diagnosis of the two subspecies which, notwithstanding its brevity, will permit easy identification:—

1. *Rana esculenta*, typica.—Inner metatarsal tubercle compressed, large, resembling that of *R. arvalis*; its length is four to five millim., in specimens in which the inner toe, measured from the metatarsal tubercle, averages nine to eleven millim. The black marbling of the flanks, and of the hinder side of the thighs, encloses more or less of bright yellow.

2. *Rana fortis*.—Inner metatarsal tubercle small, elongate, feebly prominent; its length is two to four millim., in specimens in which the inner toe measures nine to twelve millim. No yellow on the flanks or thighs.

I may add that in general coloration specimens of each subspecies vary more from one another than from the allied form; *R. fortis* is more constant in its coloration. The whole physiognomy is different, so that, in spite of the great variation of colour, persons unacquainted with Batrachological studies, and ignorant of the characters on which the distinction of the two

* Arch. für Physiol. xxix., p. 48, and xxxii., p. 522.

forms is based, nevertheless identify them with accuracy. I have no doubt that occasionally late breeders of one form may interbreed with early breeders of the other, and thus give rise to hybrids which would show intermediate characters; but this must be quite exceptional, and I may confidently affirm that among the 126 specimens which I have examined (forty-one typical *R. esculenta* and eighty-five *R. fortis*) not one has struck me as constituting a link between the two forms.

So long as the races of *Rana esculenta* were believed to occur in different districts, the importance to be attached to them was lessened, since all species which have a wide geographical range exhibit such differences, which may be ascribed to climate or other causes. But now that two quite distinct races are shown to live in the same locality, prevented from interbreeding by the difference in the time of spawning, the question assumes a very different aspect, and it seems that the subject deserves full attention. I would therefore beg my colleagues in various countries, where numbers of aquatic frogs fall daily under the scalpel of anatomists and physiologists, to observe whether any varieties of the kind here mentioned occur. I myself propose to devote much attention to the subject, and am anxiously collecting material for the elucidation of the geographical range of the races of *Rana esculenta*.

NOTES AND QUERIES.

Sir Edwin Landseer's Red-deer.—As a rule, with scarcely an exception, every recognised masterpiece of art has risen rapidly in price until it has finally passed out of the region of traffic and become literally priceless. One such masterpiece has lately changed owners for a sum which may well be termed enormous. Sir Edwin Landseer's famous painting in oil, "The Monarch of the Glen," exhibited at the Royal Academy in 1851, and since made universally known by Thomas Landseer's engraving of it, was bequeathed by Lord Londesborough, father of the present peer, to Lady Otho Fitzgerald, and on the 10th May last was put up for sale by auction, by Messrs. Christie, Manson & Wood. The nation had once a chance of obtaining this fine picture for an almost nominal sum, inasmuch as Sir Edwin offered it to the Commissioner who supervised the artistic decorations of the Houses of Parliament for £300; but the offer was declined, and the picture was subsequently purchased by Lord Londesborough for 800 guineas.

We are given to understand that at the recent sale by auction the Trustees of the National Gallery were prepared to go as high as 3000 guineas to obtain the work. The bidding commenced at £2000, and the picture was eventually knocked down to Mr. Henry Eaton, M.P. for Coventry, for £6510! Inasmuch as this gentleman's Landseer collection is in the very first rank, most people will rejoice to see it thus enriched. A gallery of pictures by Landseer represents a great chapter in English art; for Sir Edwin was perhaps the most typical painter of his period, and one of the least likely to decline in the estimation of his countrymen.

Bewick's Engravings of Animals.—By order of the executor of the last surviving daughter of Thomas Bewick, the engraved wood-blocks of his 'History of British Birds,' 'History of Quadrupeds,' 'Æsop's Fables,' &c., were sold on the 6th May last by Messrs. Christie, Manson & Wood, and fetched £2350.

The Albert Memorial Museum, Exeter.—At the last meeting of the Committee of this Institution Mr. W. S. M. D'Urban, who has filled the offices of Secretary and Curator from the first foundation of the Museum, felt obliged to tender his resignation. Mr. D'Urban's second son has been advised to proceed to California for the benefit of his health, and his parents have decided to accompany him. It would be impossible to exaggerate the services which have been rendered by Mr. D'Urban to the promotion of science and art in this neighbourhood, or the loss which the city will sustain by his removal. Many of our readers will remember his active and judicious work in the establishment and maintenance of the Exeter Naturalists' Club. To his remarkable ability and untiring energy are mainly due the excellent condition and classification of the collections contained in the Museum. It would be difficult to find any similar institution so well cared for. The Committee are anxious to take some course that may prevent the severance of Mr. D'Urban's connexion with the Museum, and it has been decided to urge him to withdraw his resignation and to take leave of absence for a period of two years, if necessary, allowing his duties to be discharged by a substitute. We are sure that Mr. D'Urban's friends will rejoice if this plan can be adopted.

The Davis Lectures, 1884.—The Davis Lectures upon zoological subjects will be given in the Lecture Room in the Zoological Society's Gardens, Regent's Park, on Thursdays at 5 p.m., commencing June 5th, as follows:—June 5th, "Man, zoologically considered," by Prof. Flower, LL.D., F.R.S.; June 12th, "Hands and Feet," by Prof. Mivart, F.R.S.; June 19th, "Instinct," by G. J. Romanes, LL.D., F.R.S.; June 26th, "Hedgehogs, Moles, and Shrews," by Prof. Parker, F.R.S.; July 3rd, "Dogs, Ancient and Modern," by J. E. Harting, F.L.S.; July 10th, "Birds Nests," by Henry Seebohm, F.L.S.; and July 17th, "Reptiles," by P. L. Selater, F.R.S.

A Carnivorous Plant preying on Vertebrata.—An interesting discovery has been made during the last week by Mr. G. E. Simms, son of a well-known tradesman of Oxford. It is that the bladder-traps of *Utricularia vulgaris* are capable of catching newly-hatched fish and killing them. Mr. Simms brought to me for examination a specimen of *Utricularia* in a glass vessel, in which were numerous young Roach newly hatched from a mass of spawn lying at the bottom. Numbers of these young fish were seen dead, held fast in the jaws of the bladder-traps of the plant. I had never seen *Utricularia* before, and am indebted to my colleague Prof. Burdon Sanderson for the identification of the plant and a reference to Cohn's researches on it. Mr. Simms supplied me with a fresh specimen of *Utricularia* in a vessel with fresh young fish and spawn, and in about six hours more than a dozen of the fish were found entrapped. Most are caught by the head, and when this is the case the head is usually pushed as far into the bladder as possible till the snout touches its hinder wall. The two dark black eyes of the fish then show out conspicuously through the wall of the bladder. Rarely a specimen is seen caught by the tip of the snout. By no means a few of the fish are, however, captured by the tail, which is swallowed, so to speak, to a greater or less distance, and I have one specimen in which the fish is caught by the yolk-sac. Three or four instances were observed in which a fish had its head swallowed by one bladder-trap, and its tail by another adjacent one, the body of the fish forming a connecting bar between the two bladders. I have not been able to see a fish in the actual process of being trapped, nor to find one recently caught, and showing by motion of the fore part of its body signs of life. All those trapped were found already dead, but I have had no opportunity of prolonged observation, and it will be remembered that Mr. Darwin, in his account of the trapping of Crustacea, worms, &c., by *Utricularia*, states that he was not able to observe the actual occurrence of the trapping of an animal, although Mrs. Treat, of New Jersey, often did so. I think it probable that the fact described by Mr. Darwin, and which is easily verified, that the longer of the two pairs of projections composing the quadrified processes by which the bladders of *Utricularia* are lined "project obliquely inwards and towards the posterior end of the bladder," has something to do with the mechanism by which the small fish become so deeply swallowed, so to speak. The oblique processes, set all towards the hinder end of the bladder, look as if they must act together with the spring valves of the mouth of the bladder in utilising each fresh struggle of the captive for the purpose of pushing it further and further inwards. On cutting open longitudinally some of the bladders containing the heads and foreparts of the bodies of fish, and examining their contents, I found the tissues of the fish in a more or less slimy deliquescent condition, no doubt from decomposition, for Mr. Darwin failed to detect any digestive process in *Utricularia*. The

quadrifid processes were bathed in the slimy semi-fluid animal substance, and the processes themselves appeared to contain abundance of fine granular matter, possibly the result of absorption, but the large quantity of surrounding animal matter present rendered the observation uncertain. The usual swarms of Infusoria were present in the decomposing matter. Specimens of the *Utricularia* with the little fish fast in the bladder-trap, and their heads or tails hanging out, can be well preserved in spirits, and show the conditions well, notwithstanding that the plant becomes colourless, and there is no longer the marked contrast between the glistening white dead fish and the green bladders, which in the fresh condition renders the combination of the trap and prey conspicuous. Mr. Simms, by whose permission I write this, intends shortly to publish an account of his observations himself. I have advised him to endeavour to prepare spirit specimens of *Utricularia* plants with numerous trapped fish *in situ* for sale to those interested in the matter who may care to apply for them. His address is 37, Broad Street, Oxford.—H. N. MOSELEY.—‘*Nature*,’ May 22nd.

MAMMALIA.

Capture of a White Whale on the Coast of Caithness.—It will be recollected that in June, 1879, a specimen of the Beluga, or White Whale, *Delphinapterus leucas* (Pallas), was captured at Little Ferry, near Dunrobin, Sutherlandshire, where it was found at ebb tide close to the salmon nets, caught in a singular manner by the tail between two short posts to which a stay-rope of the stake-net was fastened. This specimen has been described by Prof. Flower, in the ‘*Proceedings of the Zoological Society*’ for 1879 (p. 667), where an illustration is given of the animal in the position in which it was found lying. Quite recently, namely, on the 30th April last, another specimen of this cetacean, so rarely observed in the British seas, was taken in the salmon-nets at Dunheath, Caithness, and towed ashore, where it lay for some time exhibiting considerable activity. It was forwarded to Prof. Struthers, Aberdeen University, and deposited for examination in one of the courtyards of the University. It was pure white throughout, and being quite fresh presented a beautiful appearance. It proved to be a female, length about twelve feet six inches, which was the length of the specimen previously captured at Dunrobin. The pectoral fin was very broad and short, length sixteen inches, breadth ten inches. The tail-fin, deeply notched, measured thirty-two inches from tip to tip. There was no fin on the back, but a low ridge two or three feet long about the middle of the back. The teeth were nine in number on each side of the upper and lower jaw. The blow-hole was eighteen inches from the snout, measured round the very projecting forehead. The minute rudimentary ear-passage was found six inches behind the eye. Photographic views of the Whale as it lay in the College-yard have been taken by Mr. Wilson, photographer, Aberdeen, and after Professors

Struthers and Nicholson have concluded their examination the skeleton and other parts will, it is understood, be preserved in Aberdeen University.—
J. E. HARTING.

Albino Field Mouse.—On March 28th I was given an albino Long-tailed Field Mouse, *Mus sylvaticus*, L., which had been found dead that day in the garden of Dropmore Vicarage, near here. It was a true albino, the eyes being pink; there was the slightest possible tinge of colour on part of the back and flanks. It was a female, and its unusual colour had—from the look of the teats—proved no obstacle to its finding a mate, and becoming the mother of a family.—ALFRED H. COCKS (Gt. Marlow, Bucks).

BIRDS.

The British Ornithologists' Union.—The annual meeting of this Society, so well known throughout the ornithological world by the publication of its quarterly journal, 'The Ibis,' was held in London on May 21st, when the yearly accounts were audited, new members balloted for, and other matters of administration disposed of. In the regretted absence, through illness, of the President, Lord Lilford, the chair was taken by Mr. P. L. Selater. The last published list of Members showed that the Society numbered 131 Ordinary Members, eight Honorary, and twenty Foreign Members. Fifteen new Members were balloted for and elected, amongst whom were the following well-known naturalists:—Major E. A. Butler, Capt. C. T. Bingham, Messrs. W. R. Davison, H. O. Forbes, R. Lloyd Patterson, F. E. Beddard, and Abel Chapman. Mr. Bowdler Sharpe took the opportunity of exhibiting a specimen of a Nuthatch new to Europe, which had been procured in Corsica by Mr. Whitehead, and which it was proposed to name after the discoverer. The unexpected occurrence of this distinct species in an island supposed to have been so well explored created, as might be supposed, some surprise. Its nearest ally appears to be *Sitta Kruepperi* of Asia Minor. After the business part of the proceedings had terminated the Members present dined together at "The Grosvenor" Restaurant, in Bond Street, and passed an agreeable evening in ornithological gossip.

Wingless Birds.—On April 19th an interesting lecture on this subject was delivered to the members of the Essex Naturalists' Field Club in the Lecture Room at the new Natural History Museum, South Kensington, by Dr. H. Woodward, F.R.S., Keeper of the Department of Geology and Palæontology. After some introductory remarks on the distinguishing characters of the class *Aves*, and on the modifications of structure which have suggested the primary divisions of the *Saururæ*, *Ratitæ*, and *Carinata*, Dr. Woodward, taking each of these divisions in turn, gave an account of some of the more remarkable forms in each, at the same time exhibiting

specimens or diagrams of the most typical. His remarks on the *Archæopteryx* (of which he produced one of the only two specimens known to exist), on the *Hesperornis* (that gigantic wingless diving bird with teeth in grooves in the lower mandible), the *Ichthyornis* (of powerful flight, with well-developed keel to the sternum and teeth in sockets in the mandible), the fish-eating *Argilornis* and *Odontopteryx* (both with serrated bill, from the London Clay), and other equally singular forms, were listened to with great interest. In dealing with the *Ratitæ*, or keel-less birds incapable of flight, he gave a brief description of *Apteryx*, *Casuarius*, *Dromeus*, *Rhea*, and *Struthio*, pointing out their distinguishing characters, and indicating on the map their distribution in different geographical regions. Passing on then to the extinct wingless birds of Mauritius and Rodriguez, he described the Dodo and Solitaire, explained the probable causes of their extinction, and quoted Mr. Whitmee's account of the curious change of habit in the *Didunculus*, or Little Dodo, still existing in Samoa, and which, from being a dweller on the ground, had come to live almost entirely in trees, thus escaping the attacks of ground vermin, and thereby increasing its chances of survival. After pointing out that certain flightless birds had nevertheless a well-developed keel to the sternum for the attachment of the pectoral muscles to move the forearm in swimming, he exhibited specimens of the Great Auk and King Penguin, with an entire skeleton of the former now extinct bird, from Funk Island, Newfoundland. At the conclusion of the lecture the auditors were accompanied through the palæontological and ornithological galleries by Dr. Woodward and Mr. Sharpe, who pointed out to them *en route* various specimens of interest which aptly illustrated the lessons which had been just previously imparted.

Abnormal Eggs of Blackbird.—In the May number of 'The Zoologist' (p. 195) you published my account of a Blackbird's nest which contained only light blue spotless eggs both last year and this. Her nest of this year was taken, but she has now built again within a few yards. All her four eggs are again light blue, and without a spot on any one of them.—J. H. BUXTON (Hunsdon Bury, Ware).

Habits of Parrots.—An Indian Ring-necked Parrakeet, *Palæornis torquatus*, which I had for some years, used often, like Lord Clermont's Parrot (p. 145) to dip his lumps of sugar into his drinking water to soften them. I have no doubt it is quite a common thing for Parrots to do. The bird to which I refer was a most entertaining one. He used to fly about our grounds all day long, and no weather, however wet or cold, would induce him to remain quietly in his cage. At dusk he would appear at one of the kitchen windows and tap until he was admitted, and would then fly straight to his cage, and always appeared to be very glad to find himself there again. But when the next morning came he would be restless and noisy until the

doors were opened and he could fly forth again in search of his friends. For a long time the postman was chief favourite, and Polly would fly down the avenue to meet him, returning to the house on the postman's cap. Polly next conceived a very warm attachment for one of the farm servants, a milkmaid, and would search the farm until he found her, and would be then happy for the day, accompanying her to the fields for the cows, attending the milking operations, &c., and always returned to his cage before dark. One day when the hounds met here, Polly was greatly pleased and excited by the scene. He flew just in front of the hounds while they were drawing the covers, chattering all the words he knew, and whistling his one tune, "God save the Queen," in a very ridiculous manner. We had a tame Jay about the house, and this bird in a very short time learned all Polly's words and cries, which he pronounced in Polly's own way, much to that bird's astonishment and disgust. It is well known what clever mimics Jays are. They sometimes deceive me by the way they copy the Brown Owls—not their loud hoot, but their soft mating call. Polly was very curious when strangers came, generally alighting on their hats or bonnets, and owing to this we lost him, as one day he descended on some passer by, who appropriated him and carried him off.—MURRAY A. MATHEW (Stone Hall, Pembrokeshire).

Varieties near Carlisle.—An old male Chaffinch, of a general canary-yellow colour, was shot at Rickerby Park on October 11th, 1883, and was brought to me in the flesh through the kind offices of Mr. W. Duckworth. The crown is sprinkled with a few black feathers, and one or two of the quill-feathers are also black. The throat is pale pink. The general tint of pale yellow becomes intensified into orange upon the back. I may also mention that a male Blackbird, prettily mottled with white, was shot near Carlisle about the same time; and that a pied Hedge Warbler, two really white Sparrows, and a pied male Chaffinch are all to be found in their haunts near Carlisle at the present time.—H. A. MACPHERSON (Carlisle).

Scarcity of Fieldfares and Redwings during the past Winter.—Although during the past winter I was constantly in different parts of Monmouthshire, Gloucestershire, Wilts, Berks, and Kent, I never saw a single specimen of the Fieldfare or Redwing. Starlings, on the contrary, were unusually numerous; I never remember to have met with such large flocks. I took the opportunity of procuring some, and verifying by dissection the fact that the hen birds have a pale orange rim round the outer edge of the iris, whereby it can be readily distinguished at all seasons and in all plumages from the male bird, whose iris is dark hazel.—J. YOUNG (64, Hereford Road, Bayswater).

Snipe perching.—Apropos of Mr. Nelson's note (p. 28), I venture to send you the following extract from my note-book:—On June 25th, 1880,

being on the river near Wroxham Church, Norfolk, I saw a Snipe sitting on the top of a dead tree, about fifteen feet from the ground. On my return journey I saw another near the same spot, sitting upon a gate-post. Being in a light canoe, I approached within five or six yards of him before he took flight. Again on March 31st, 1883, I saw two Snipe perching, this time on the top of a live alder tree not far above the railway bridge at Wroxham. When I disturbed them they flew a short distance to another tree and perched again. On being put up a second time, however, they flew round in circles wheeling and "drumming."—HENRY ROGERS Harpenden).

Great Grey Shrike in Northamptonshire and Oxfordshire.—Hearing that a strange bird with a grey back and black and white wings had been captured at the village of Middleton-Cheney, Northamptonshire, I walked over one afternoon, and after some search found it. It was, as I expected, an example of the Great Grey Shrike, and an adult bird, the back being of a fine pearl-grey and the lower parts entirely unmarked. Its owner, a boy, caught it in his bat-fowling clap-nets in a thorn-hedge about five weeks before I saw it—*i. e.*, about the end of December or beginning of January. A few days previously I examined a second example, which was shot near Croughton, Northamptonshire, on January 19th. This proved to be a male, and is immature; upper parts dull grey; breast dusky, with numerous crescentic markings. This bird appears to be intermediate between the European *Lanius excubitor* and *L. major*, the secondaries having only a very little white at their bases, and the closed wing showing only one white spot; this is also the case with the other specimen, but as it had been placed by the village stuffer in the usual small box case I was unable to examine it thoroughly. Besides these, a birdstuffer, who knows the bird well, tells me he saw one by the canal near Bodicote about the 10th of February last.—OLIVER V. APLIN (Great Bourton, near Banbury).

Curious nesting-place of the Great Tit.—In the beginning of June, 1883, we found a nest of the Great Tit quite a foot below the ground amongst the roots of a huge elm tree in Nuneham Park, Oxon. It contained five fully fledged young birds.—J. R. EARLE (15, Norham Road, Oxford).

Wild Duck laying in a Rook's Nest.—Six Wild Ducks' eggs, perfectly fresh, were taken, on March 26th, out of a Rooks' nest, between three and four miles from here. The nest was surrounded by other Rooks' nests, one being within a yard of it. The rookery was not far from the river Test, the tree (a horse-chesnut, in which the nest chosen by the Wild Duck was) being about twenty-five yards from the river, and the nest about thirty feet from the ground. The bird was on the nest. The trees in which the rookery was built were chiefly elms, there being only two or three horse-

chesnuts. I am aware that Wild Ducks occasionally nest in trees; but I do not recollect to have read of an instance where the nest chosen was in the midst of a rookery, and I thought you would probably consider it of sufficient interest to chronicle. Stanley mentions an instance of a Wild Duck using a Rooks' nest, at Madeley, in Staffordshire, but does not note the position of the nest.—JOHN H. WILLMORE (Queenwood College, near Stockbridge, Hants).

Wild Duck laying in Rook's Nest.—With reference to Mr. Willmore's note, I have met with several instances in Lincolnshire of Wild Ducks nesting at a considerable height above the ground. Once in an oak in a plantation in the old nest of a Carrion Crow; in ivy on a ruined wall; and on the top of a straw-sack. Once also on the roof of an old bean-stack in the marshes. I have known a Wild Duck to nest on the ground amongst brambles and rough grass in the centre of a plantation a mile or more from pond or running stream.—JOHN CORDEAUX (Great Cotes, Ulceby).

Variety of the Sky Lark.—My neighbour's keeper brought me a variety of this bird in which the first seven flight-feathers on the right wing and the coverts above them are pure white, and on the left there are five white flight-feathers, with a few above them the same colour; the rest of the plumage normal.—J. WHITAKER (Rainworth Lodge, Mansfield).

Abnormally coloured Sky Lark.—On the 31st March last, on visiting the Valletta market, I noticed in one of the stalls, amongst a number of Larks, one (*Alauda arvensis*) the under parts of which were a brilliant yellow, with the usual markings. I made a skin of it. Twelve hours after I had put it up as a skin, this yellow colour had faded very much, and when I looked at it again, about a month after, it appeared quite gone, leaving the usual yellowish white coloration. I have noticed this plumage before. The bird was a male.—E. F. BECHER (Malta).

The American Kestrel in Yorkshire.—In your last issue Mr. W. E. Clarke, in his supplementary notes on the Yorkshire Fauna, says (p. 176), that he cannot accept this bird as a member of the Yorkshire Fauna. In justice therefore to myself and to those who have so kindly aided me in investigating the matter, I must state that I have gained additional strong evidence in its favour, which is wholly disinterested and independent of either the person by whom the bird was skinned or the stuffer who eventually sold it to me.—J. BACKHOUSE, JUN.

Early nesting of the Goldcrest.—On the 22nd March last we found a nest of the Goldcrest near Oxford. It was just finished, and I think would have had eggs in two days time. The nest was only four feet nine inches from the ground, while I have found them at an elevation of twenty-five feet.—J. R. EARLE (15, Norham Road, Oxford).

Wood Pigeon cooing at Night.—On April 9th I heard a Wood Pigeon cooing in our wood between 10 and 11 o'clock at night. It was calm and mild, and the moon was almost full. The note was loud and unmistakable. The cooing was continued at intervals when I was in the wood, and had not ceased when I left it. Has anyone yet attempted a list of such British birds as are occasionally heard at night?—RICHARD M. BARRINGTON (Fassaroe, Bray).

[Numerous notices of birds which sing at night might be referred to. See White's 'Selborne,' to begin with (Letter I. to Danes Barrington), and footnote to the passage in my edition of that work, p. 139; 'Our Summer Migrants,' p. 37; and various notes on the subject scattered throughout former volumes of 'The Zoologist.'—ED.]

Siskin and Snow Bunting in North Devon.—On March 6th I saw a Siskin in beautiful plumage. This is the first time I have seen or heard of this bird in this district, my acquaintance with which dates from 1879. On the 7th a Snow Bunting was picked up on Northam Burrows and brought to me. Its plumage tallied exactly with Yarrell's description of the bird as it appears on its first arrival at the beginning of winter. We have one other specimen in our Museum, which we procured from Mr. Rowe, the birdstuffer of Barnstaple.—HERBERT A. EVANS (United Service College, Westward Ho).

Variety of the Yellowhammer.—At p. 114 I noted a very singular variety of the Yellowhammer, with whisker-like marks of rufous, and a tinge of the same colour over the eye. Mr. F. Bond's collection of varieties contains one exactly like it, taken at Brighton in the spring of 1869. There is not the slightest deviation from the usual colouring in any other part of the plumage in either of these birds. Both are males.—J. H. GURNEY, JUN. (Hill House, Northrepps, Norwich).

The Avi-Fauna of Spitzbergen.—Looking through the back volumes of 'The Zoologist,' a few weeks ago, for something else, I met with a paper on the Fauna of Spitzbergen, by the Rev. A. E. Eaton, M.A., &c., in the volumes for 1873 and 1874, which I had overlooked when writing my notes on Spitzbergen, published in 'The Zoologist' for 1882 and 1883, and it may perhaps be worth calling attention to his observations on the following species of birds:—

"Lesser Redpoll, *Linota linaria*" (S.S. 3805).—This should be doubtless the Mealy Redpoll, *L. linaria*, Linn., as a specimen brought home has been so identified by Prof. Newton (Yarrell, 4th edit. ii. 144), besides the fact of this species having a more northerly range than the Lesser Redpoll, *L. rufescens*, Vieillot. On May 27th a male Redpoll alighted on the ship, in lat. 75° 13' N., long. 2° 30' W. (S.S. 3763 and 3806). A Redpoll was seen in Wüde Bay on the "6th Sunday after Trinity"; later one was heard

singing, which was shot, and placed in Mr. Eaton's hands (p. 3807). "Apparently Redpolls are not uncommon in that part of Wüde Bay. Our men saw five or six on the uplands in the same neighbourhood. They also found a nest," which was probably of this species.

Ringed Plover, *Ægialitis hiaticula*, L.—"Lieut. Chermiside saw a Ringed Plover in Wüde Bay, which attempted to entice him away by shamming lameness, as if its nest was close at hand" (3809).

Pomatorhine Skua, *Stercorarius pomatorhinus*, Temm.—Six obtained in Hinlopen Straits in August. Numerous off Low Land (south coast of North-East Land). A few seen at Hope Island in September.

Buffon's Skua, *S. longicaudus*, Vieillot.—Seen at Wüde Bay; Diana Island, entrance to East Fjord; and in various localities between the mainland of Spitzbergen and North-East Land. Several examples were shot.

Bernicle Goose, *Anser leucopsis*, Bechst.—A party seen, out of which seven were obtained, on the hills opposite Diana Island, on July 22nd (p. 3815).—ALFRED HENEAGE COCKS (Great Marlow, Bucks).

Song of the Tree Sparrow.—The other day, when standing by the pond-side here, I heard a song which I never remember to have heard before; it came from a small bird on the top of a tall larch. I could not quite make out the bird amongst the thick branches, so I shot it, and was surprised to find it was a Tree Sparrow. The notes were very sweet, and six or seven in number, which when gone through were repeated, something like a Bullfinch, but softer and much more sweet—a song of some pretensions, and exceedingly pleasant to the ear.—J. WHITAKER (Rainworth Lodge, Mansfield).

Blue-headed Yellow Wagtail in Confinement.—The following account of forty-eight hours' acquaintance with *Motacilla flava* may perhaps be interesting as showing an extraordinary degree of tameness. At this time of the year (end of April and beginning of May) *M. flava* is caught at Malta in considerable numbers and sold alive to act as fly-catchers. Their wings are clipped, and they are allowed to run about in the kitchens and houses in order to keep down the supply of flies; they are never fed, but live by their own exertions. One morning I noticed one in our mess-kitchen which had only been obtained four days back from the bird-catcher. This bird I took to my own room (this was at 9 a.m. on the 19th April). To catch it we chased it up and down the kitchen sufficient to frighten any ordinary bird almost to death, but when I released it from my hand in my room it simply ruffled its feathers and ran about as if nothing had happened. I caught a few flies and tried to induce it to eat from my fingers, but it would not do so, but took them readily from the ground about an inch from my hand. I will now quote from my notes:—"Now, 2 p.m., it will eat out of my hand. When I come into the room, after a short absence, it runs to meet me, apparently expecting ready-caught flies. During the

afternoon I had to skin some birds; the Wagtail flew (its wings were so cut that it could fly a little) on to my table whilst I was at work. Steeple-chasing over the varied and numerous impediments in hot pursuit of flies, attracted by the carcasses of the birds I was operating on, it got a little tow entangled in its claws, so I had to hunt it down in order to catch it. After an operation of about two minutes' duration I released it. It simply preened its feathers, and then chirped about me as usual. Wherever I move the bird follows close at my heels. This is not a mark of any particular attachment, as it is a peculiarity of Wagtails to follow persons in this way. When I went into my bed-room it refused to be driven back; I think this was because it had there seen me catch the flies I had given it. I offered it some small bits of raw liver, but it would not look at them; shortly afterwards, however, I found it pulling away at a piece which had stuck to an envelope and dropped on the floor. I saw it could not very well manage it, so went to get it from him to cut into small pieces, but it had evidently tasted, and had taken to it so kindly that I could not get it away from him, and in the end he swallowed it. I was very much struck that he did not attempt to use one of his feet as an aid—had he done so it would have been of great assistance. This I remarked on several occasions. My servant tells me that when he was on detachment at an outlying fort they got twelve of these birds, which quite rid them, comparatively speaking, of those pests, mosquitoes. 20th.—I thought I had lost my Wagtail yesterday evening, as it had disappeared, and in spite of a hunt I could find it nowhere. When I got up, at about half-past five, and moved about, making considerable noise over the manufacture of a cup of tea, he did not appear; but about half-past six, as I was reading in bed, I was pleasantly surprised by seeing him hop on to my bed. He took considerable interest in my tubbing operations, perching himself on the edge of my bath. He drank at some small pools on the stone floor which had splashed from my bath. He seemed to prefer this to some water I poured out for him in a saucer; he took a sip or two and stood in it, but returned to his splashes, nor did he seem inclined to bathe. I gave him some ants, which he seemed to enjoy very much, but small pieces of raw liver seem to delight him most; after getting a bit he bothers me to give him more; he is on my hands, book, and everywhere, as I write—quite irrepressible—I can hardly drive him away. I took him into the ante-room, about thirty yards off, to reach which one must pass out of doors. He followed me like a dog, but occasionally some flies tried his allegiance. I was supplied, however, with some small pieces of raw liver to offer him when he lagged behind too much. The Wagtails in the kitchen, which were only brought in yesterday, are running about to-day quite tame. 21st.—I and the Wagtail both got up this morning at our usual hour—I at 5.30, he at 6.30 a.m. As I was reading in bed I heard him in the next room, so I called to him, when he at once came on to my bed, hopping about my head, arms, and books. When he left my bed to wander elsewhere

I could always call him to me again. At breakfast he was all about my breakfast things, catching flies. He had a heavy fall, missing his footing on one occasion as he flew from a chest of drawers to my table. This I think caused his death, as immediately afterwards I left the room, and when I returned, in about ten minutes, I found him huddled up in a corner, and one leg almost useless. He shortly afterwards died—the end of most pets—an untimely death." The above, as I have said, is from my notes, and may appear to enter rather too much into minutiae, but I wish to show that a bird within six days of being in a wild state, without any special endeavours to tame it, arrived at an almost perfect state of confidence in man. I do not regard it as showing any particular affection for myself individually, for it was just as confiding to any friend who came to see me. I do not know whether all wagtails have this tendency to domesticity, as my experience is limited to *M. flava* and *M. alba*. It was a pretty sight to note his several attitudes when crouching watching a fly in his neighbourhood. He never would even look at a fly on the wall which was out of his reach. I think this was because he knew that his clipped wings prevented him being successful, and it was no use troubling about it. In a wild state these birds will allow anyone to approach very near to them. They thus fall very easy victims to the birdcatcher.—E. F. BECHER (Malta).

FISHES.

Cyclopterus lumpus at Penzance.—For the first time within my experience, which now covers thirty-four years of actual observation, I have obtained a male specimen of the Lump-sucker, or Lump-fish, *Cyclopterus lumpus*. I have had many specimens of the female or "Blue" Lump-sucker, but this is the first male or "Red" Lump-sucker which I have ever seen. It was captured at the Scilly Islands on April 27th, and kindly sent to me by the Lord Proprietor, Mr. J. A. Dorrien Smith. I need not describe it, because it quite agrees with the descriptions given by Yarrell and Couch, except that the brilliant scarlet colour which suggested the name of the Red Lump-fish is in this specimen confined to the region below the lateral line. Above that line it is blue, as in the female.—THOMAS CORNISH (Penzance).

Large Surmullet in Mount's Bay.—On May 6th I received from William Allen, a fisherman, of Prussia Cove, in Mount's Bay, the largest Surmullet, *Mullus surmuletus*, yet recorded. It measured seventeen inches in length over all, and from eye to fork one foot and half an inch, and turned the scale at forty-two ounces. I recorded a Surmullet of thirty-six ounces and a half in 'The Zoologist' for October, 1875, and another of sixteen inches and seven-eighths in length, weighing thirty-eight ounces and a half, in November of the same year. I then mentioned that this latter specimen was the largest for size recorded, but not the heaviest, Couch having weighed one at forty ounces. It will be seen that my present specimen tops my largest in size and Couch's in weight.—T. CORNISH.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 1, 1884.—Prof. P. MARTIN DUNCAN, F.R.S., V-P., in the chair.

Messrs. William Denison Roebuck and Fred. Newton Williams were elected ordinary Fellows of the Society. Prof. Ernst Haeckel, of Jena, Prof. Alex. Kowalevsky, of Odessa, and Prof. O. Schwendener, of Berlin, were likewise balloted for and elected Foreign Members of the Society.

Mr. S. O. Ridley exhibited drawings of the spiculation of some Sponges collected and forwarded by Dr. Wm. Chas. Ondaatje, of Ceylon, sections of which had been shown and commented upon at a previous meeting of the Society. Mr. Ridley also exhibited coloured sketches from nature of Ceylonese *Actiniidae*, made under the superintendence of Dr. Ondaatje. Prof. Jeffrey Bell afterwards pointed out the chief characteristics of a set of drawings of Comatulids, taken from the living objects as obtained by Dr. Ondaatje from the seas of Ceylon, the entire series giving promise of useful scientific work in progress on the Ceylonese coasts.

Mr. R. Bowdler Sharpe read a paper "On a Collection of Birds from the Bahr el Ghazal province and the Nyam-Nyam country in Equatorial Africa." For the opportunity of examining and describing this interesting collection he expressed his indebtedness to Herr Bohndorff, who had just returned from a long residence in these regions. The author noted, with expressions of surprise, the presence of many species in Bohndorff's collection of birds hitherto believed by ornithologists to be peculiar to West Africa, referring in the case in question to those species which had been shot in the Nyam-Nyam country. On the other hand, he adverted to those species from the Bahr-Gazelle tributaries and adjoining nilotic district as well-known inhabitants of North-Eastern Africa and the Senegambian area. From this he inferred that Herr Bohndorff had crossed the boundary line of two faunas, and that the animals of the Nyam-Nyam region assimilate to those of the Gaboon territory and Congo, rather than to those of the Lado district or of Kordofan. This change in the fauna is attributed by Herr Bohndorff to the difference in the nature of the country; swamp and low-lying grassy plains on the east being replaced by forest-land on the west. Mr. Sharpe, following the classification adopted by Hartlaub in his record of Emir Bey's collections from Equatorial Africa, gave descriptions of new species and remarks on little-known birds. Amongst new forms are *Crateropus Bohndorffi*, *Sigmodus mentalis*, *Ceuthmochares intermedius*, *Pionias crassus*, *Syrnium Bohndorffi*, and others of considerable significance in relation to faunal distribution.

The interest of this communication was heightened by remarks from Herr Bohndorff himself, and the presence of his servant Yuma, a veritable Nyam-Nyam boy, whom he had brought with him. An interesting discussion followed.

Mr. R. A. Rolfe communicated a paper "On the Flora of the Philippines, with reference to its probable derivation." In this he criticised Mr. Wallace's opinion on the fauna, differing from him in the belief that the recent flora of the islands indicate that they are truly insular in the essentials of their present Natural History, and have been largely dependent on volcanic origin, rather than that their flora and fauna are alone the result of an early separation from the Asiatic continent with total submergence for an indefinite period.

Mr. George Brook read a "Preliminary account of the development of the Weever Fish, *Trachinus vipera*." After mentioning that the eggs had been laid in his aquarium at Huddersfield, where this fish had been kept alive for more than two years, he drew attention to the fact of there being a vitelline membrane present in the eggs of this fish as well as in those of the Herring; in contradistinction, therefore, to what is stated to be the case in osseous fishes generally. He also particularly referred to the persistent nature of the segmentation cavity, which is pushed round the yolk-sac concurrent with the development of the embryo from the blastoderm, and that it does not entirely disappear until the yolk is absorbed. The circulatory system, according to Mr. Brook's researches, is very late in developing, no blood-vessels appearing until several days after hatching. In illustration of his paper, he exhibited under the microscope preparations showing the segmentation stage, the embryonic shield and commencement of keel, the early embryo third day before closure of the blastopore, and fourth-day blastopore, with Kupffer's vesicle, also at the eighth day, and the newly-hatched embryo.

The Chairman having put to the meeting the election of Auditors, the following were appointed:—for the Fellows, Dr. J. Millar and Mr. J. Jenner Weir, and for the Council, Mr. T. Christy and Mr. H. T. Stainton.—
J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

May 6, 1884.—Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, and called special attention to two Nepalese Hornbills, *Aceros nipalensis*; a Gigantic Salamander, *Megalobatrachus maximus*; three examples of the Lesser Bird of Paradise; a fine Mediterranean Seal; and other rare acquisitions.

Prof. Bell exhibited some specimens of *Estheria melitensis*, sent from Malta by Capt. Becher, R.A., and stated that, in answer to his inquiries, that gentleman had confirmed the fact of the males appearing to equal in number the females, as had been stated by previous observers of the members of the genus.

Mr. G. A. Boulenger read a paper on the Reptiles and Batrachians of

the Solomon Islands, principally based upon two collections forwarded to the British Museum from that locality by Mr. H. B. Guppy, R.N.

Lieut.-Col. Godwin-Austen exhibited an old Indian drawing representing a Tiger-hunt; and called attention to the colour of one of the Elephants engaged, which was of a creamy white.

Prof. Flower described the state of dentition of a young *Capybara*, *Hydrochærus capybara*, born in the Society's Gardens, which had died when eight days old. All the teeth of the permanent series were present and in use.

Prof. F. Jeffrey Bell read a paper on *Amphicyclus*, a new genus of Dendroclinotous Holothurians, and on its bearing on the classification of the suborder.

A communication was read from Mr. Edgar A. Smith, containing a report on the Land and Freshwater Mollusca which had been collected during the voyage of H.M.S. 'Challenger' from December, 1872, to May 1876. The collection contained examples of 152 species, some of which were of interest and several new to science.

A communication was read from Count Berlepsch and M. Taczanowski, containing an account of a second collection of birds made in Western Ecuador by Messrs. Stolzmann and Siemiradzki. There were stated to be examples of 177 species in this collection, which had been made at various localities on the western slope of the Cordilleras above Guayaquil. The following species were described as new:—*Henicorhina hilaris*, *Chlorospingus ochraceus*, and *Spermophila pauper*. A new genus, *Pacilotriccus*, was proposed for *Todirostrum ruficeps* of Kaup.

A paper by Messrs. Godman and Salvin was read, which contained a list of the Rhopalocera obtained by Mr. G. French Angas during a recent visit to the island of Dominica. The number of species in this collection was twenty-seven, among them being a species of *Nymphalinae* apparently new; this the authors proposed to describe as *Cymatogramma dominicana*.

Mr. Herbert Druce read a paper describing the Heterocera collected by Mr. Angas on the same island.

May 20, 1884.—Sir JOSEPH FAYRER, F.R.S., Vice-President, in the chair.

Mr. W. T. Blanford exhibited and made remarks on a series of horns of the Wild Sheep of the Pamir, *Ovis polii*, Blyth, which had been obtained by the Hon. Charles A. Ellis from the Pamir district during his recent journey to Yarkand.

Mr. R. Bowdler Sharpe exhibited and made remarks on a second specimen of the new European Nuthatch, *Sitta Whiteheadi*, recently discovered by Mr. Whitehead in Corsica.

Dr. J. G. Garson exhibited and made remarks upon a specimen of the Northern Stone Crab, *Lithodes maia*.

Mr. Frank E. Beddard read the first of a series of papers on the Isopoda collected during the voyage of H.M.S. 'Challenger.' The present communication treated of the genus *Serolis*, sixteen species of which were represented in the specimens obtained during the Expedition. Of these nine were described as new. The author also gave a short account of the geographical distribution of the genus, and pointed out some of its peculiar structural points.

Mr. Gwyn Jeffreys read the eighth part of his papers on the Mollusca of the 'Lightning' and 'Porcupine' Expeditions. It included the families *Acridæ*, *Pyramidellidæ* and *Eulimidæ*, with seventy-five species. Two genera and twenty-three species were described by the author as new to science.

Prof. F. Jeffrey Bell read the fourth of his series of papers on the Holothurians. The present communication gave an account of the structural characters of the Cotton-Spinner, *Holothuria nigra*, and especially of its Cuvierian organs.

Mr. F. Day read a paper on races and hybrids among the *Salmonidæ*, in continuation of a former communication made to the Society, and continuing an account of the experiments made by Sir James Gibson-Maitland in the hybridization of *Salmonidæ* in the ponds of Howietown.

A communication was read from Mr. R. Collett, containing the description of some apparently new Marsupials obtained by Dr. Limholtz in Northern Queensland. These were described as *Phalangista Archeri*, *P. herbertensis*, *P. lemuroides*, and *Dendrolagus Limholtzi*.—P. L. SCLATER, Secretary.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 2, 1884.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

Edward Pyemont Collet, Esq. (76, Islip Road, Kentish Town, N.W.), Stanley Edwards, Esq. (Kidbrook Lodge, Blackheath, S.E.), F. Lovell Keays, Esq., F.L.S. (Fairmile Court, Cobham, Surrey), Edmund Shuttleworth, Esq. (8, Winckley Square, Preston), and John A. Finzi, Esq., formerly a Subscriber, were balloted for and elected Members of the Society.

The President read a letter received from Mr. A. J. Spiller.

Mr. T. R. Billups exhibited specimens of *Sigalphus obscurellus*, Ns., and *Diospilus oleraceus*, Hal., bred from the cabbage-stem galls of *Ceuthorrhynchus sulcicollis*. Mr. Billups believed that the former species emerged from the galls, whilst the latter species emerged from the earth-cocoons made by the weevil larvæ. Specimens of *C. sulcicollis*, Gyll., its cocoons, and gall were also exhibited.

Mr. J. Jenner Weir remarked that he had found it impossible to grow any of the cabbage-tribe in his garden, owing to the amount of "club" resulting from the attacks of this weevil; the only remedy he had found to be at all efficient was the free use of gas-lime.

Mr. Billups also exhibited three specimens of *Dimeris mira*, Ruthe, captured at Headley Lane last January; and two specimens of *Ceroptres arator*, Hart., bred from the galls of *Cynips Kollari*. Also a long series of the very local *Philonthus thermarum*, Aubé, taken from a cucumber-frame on the West Ham marshes.

Mr. H. Bedford Pim remarked that he had captured twenty specimens of *P. thermarum* in a hotbed at Dulwich last year.

Sir Sidney S. Saunders read a paper, "On the *Pediculus melittæ* of Kirby, and its affinities with reference to the larva of *Meloë*." This was illustrated by the exhibition of many microscopic preparations of the specimens referred to in the memoir, and by an exhibition of many thousand specimens of the yellow larvæ of *Meloë*.

Mr. H. J. Elwes read a paper, "On the Genus *Parnassius*," especially referring to the remarkable form and development of the anal pouch in the females as a specific character, to the geographical distribution of the species of the genus; and made some remarks on their life-history. Edwards' and Burmeister's writings on the genus were referred to, and Mr. Elwes commented on the remarkable fact that almost every systematic writer except Boisduval had entirely overlooked the presence of the anal pouch. Mr. Elwes illustrated his remarks by numerous diagrams, and by the exhibition of specimens of every known species and form occurring in the genus. A discussion followed, in which Messrs. Dunning, Fitch, Weir, Kirby, Pascoe, and Slater took part.

Mr. E. Meyrick read a further paper on the classification of the Australian Pyralidina, treating of the families *Musotimidæ*, *Botydidæ*, and *Scopariidæ*. He remarked that only forty per cent. of the *Botydidæ* were endemic, whereas the general average in all other groups, except the Butterflies, was about ninety per cent.

Lord Walsingham communicated a paper on "North American Tortricidæ."

May 7, 1884.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

The President feelingly alluded to the loss the Society had sustained since their last meeting through the death of their Vice-President, Sir Sidney Saunders, who was then present and read a paper to the Society. He made some remarks on Sir Sidney's life and works, and said it was the second time it had fallen to his lot to announce the death of a Vice-President in harness; now it was "one of the oldest and worthiest of our colleagues, and one who with a genuine love of Science combined with it the courtesy and kindness of a gentleman."

W. H. Patton, Esq. (Waterbury, Connecticut, U.S.A.), and William White, Esq. (Morden House, 55, Highbury Hill, N.) were balloted for and elected Members of the Society.

Mr. W. F. Kirby exhibited a remarkably small and dark variety of *Samia Cecropia*, Linn., bred by M. Alfred Wailly.

Mr. C. O. Waterhouse exhibited an *Aphis* from apple, and a large *Aphidius* bred therefrom, the cocoon of the parasite being formed underneath the body of the *Aphis*. Also, on behalf of the Rev. F. A. Walker, three dragonflies, captured in the island of Rhoda, opposite Cairo. Mr. M'Lachlan identified these as a male *Crocothemis erythræa*, Brullé, and a pair of *Trithemis rubrinervis*, Selys.

Mr. T. R. Billups exhibited upwards of sixty specimens of Hemiptera, captured at Headley Lane on January 14th last. The collection included the following species:—*Metacanthus punctipes*, Germ., *Tropistethus holosericeus*, Hahn, *Peritrochus puncticeps*, Thoms., *Drymus sylvaticus*, Fabr., *Stygnocoris sabulosus*, Schill., *Cymus clavicularius*, Fall.; *C. glandicolor*, Hahn, *Monanthia costata*, Fabr., *M. cardui*, Linn., *Acalypta parvula*, Fall., *Piezostethus cursitans*, Fall., and *Anthocoris sarothamni*, D. & S.

The Secretary, on behalf of Mr. Samuel Stevens, exhibited specimens of *Andrena fulva*, Schr., and read a note referring to their destructive habits to a garden-lawn at Upper Norwood, "by burrowing in the grass and throwing up small mounds of mould all over the lawn." Mr. M'Lachlan and Mr. Waterhouse said they had been consulted as to means of remedying similar evils caused by this bee, and Mr. Waterhouse further remarked that it was particularly abundant this spring in his own garden at Wandsworth.

Mr. A. S. Olliff exhibited a new species of *Helota*, an Eastern Asian genus, collected in Angola by Dr. Welwitsch; he proposed to describe it under the name *Helota africana*. Mr. Olliff said that Lord Walsingham had pointed out to him a similar and equally unexpected case of geographical distribution in the genus *Deuterocopus* of Zeller, belonging to the *Pterophoridae*, which up to this time had only been known from Java, and of which he has lately received an undescribed species from Bathurst, West Africa.

Mr. E. A. Fitch exhibited specimens of *Isosoma orchidearum*, Westw., bred from insect-affected shoots of *Cattleya Trianae*, sent to him by Mr. R. P. Percival, of Southport. The affected shoots were exhibited, also specimens of swollen rootlets which bore evidence of insect attack, but from which at present nothing had been bred. Mr. Fitch remarked that he still believed the *Isosoma* to be parasitic on some other insect, which was the destructive species—probably some dipteran, because the seven specimens of the *Isosoma* bred had emerged from one small hole in a shoot (exhibited).

Mr. A. G. Butler communicated a note, by Mr. A. R. Grote, on the North American genus *Hemileuca*.

Mr. A. G. Butler communicated a paper, "On the Lepidopterous genus *Cocytia*," remarking on the two already known species (*C. Durvillei*, Boisd., and *C. chlorosoma*, Butl.), and describing a new species (*C. Veitchii*) somewhat intermediate in character between them.—E. A. FITCH, Hon. Sec.

